

INSTRUCTOR: Stefan Leutgeb
Pacific Hall 3225A
246-0824

LECTURES: Tuesday and Thursday 8:00 - 9:20 a.m., Price Theatre

TEXT: *Human Physiology: An Integrated Approach*, 5th edition, by Dee Silverthorn (2010). The syllabus lists assigned reading in the text (including an introductory assignment); this material will be covered in the exams.

THIS COURSE OUTLINE provides you with

- (1) the syllabus for BIPN 100,
- (2) an outline of the material to be covered in BIPN 100 this quarter
- (3) a copy of most of the figures and tables that will be used during lectures **and** that are not in your text
- (4) a problem set for every week of the course except the first week, and
- (5) keys from a previous year's exams.

The lectures in the course will approximately follow this outline, but will not be exactly identical. **Unless I specifically tell you otherwise, you will be expected to be familiar with the material in this outline, whether or not it was specifically mentioned in the lecture.**

Please notice that the Course Outline contains many figures. Because most exams in the course include figures for you to interpret, paying attention to every figure will improve your skill at interpreting this form of scientific communication, and will probably help you to do better on exams.

HINT FOR SUCCESS: Many students who have earned A's in this class report that course outlines are most helpful if they read the material **before** the lectures. The outline can also reduce the amount of material you need to write down as lecture notes, and it provides you with a copy of most of the figures projected during lectures so you can take notes on them. Just reading the outline is a poor substitute for attending lectures.

PODCASTS OF LECTURES Lectures will be podcast as long as students are using this resource. If students use Podcasts as a substitute for attending lectures or do not use them at all, Podcasting will stop.

To reach the Podcasts use your Web browser to go to <podcast.ucsd.edu>. You can listen to each lecture from that site or download it to your MP3 player. These are audio files; no figures are included.

COURSE WEB SITE There will be a WebCT site for the course <WebCT.ucsd.edu>. Student accounts are added on the first day of classes. Concurrent enrollment (Extension) students are not added automatically. Extension students should obtain a registration token from Extension's student services or the ACS Help Desk. More information is at <<http://sdacs.ucsd.edu/~icc/ce.php>>

Announcements, updates, postings, previous lecture notes, class discussion forums, and exam grades will all be communicated using WebCT.

GETTING YOUR QUESTIONS ANSWERED can be difficult in a class the size of BIPN 100. Answering your question during lectures is difficult, especially if it is clear that a student needs individual attention. To help solve this problem, there are several alternative routes to get your questions answered.

- (1) **Office hours.** Dr. Leutgeb will hold two office hours per week **as long as both are well-attended**. One of them will be held in a conference room, to accommodate groups of students. The other office hour will be held in my

office to provide individual attention. Other times will only be available by appointment and only if my schedule permits. Teaching assistants will also hold office hours.

Times and locations of all office hours will be announced by the end of Friday, Jan 8.

(2) **E-mail.** You can ask your questions by posting a message on WebCT. The messages will be replied to by either the TAs or by Dr. Leutgeb. If you have straightforward questions that can be answered briefly you can expect a prompt response, sometimes even during weekends. Please do not send questions about course material to a personal e-mail address, but use Dr. Leutgeb's e-mail address (sleutgeb@ucsd.edu) only for matters that **require** my personal attention and **be sure to include <BIPN100> in the subject line.**

HOW TO FIND OUT WHAT IS GOING ON IN THE COURSE. Check the Announcements section of the course on WebCT, or come to the lectures. Important announcements will be written on the blackboard and will stay up for the entire lecture.

PROBLEM SETS are located at the end of this outline. They consist of questions and problems of the same sort as on exams.

1. Most of the problems require you to *use* information, not simply to memorize it and parrot it back. A typical exam question gives an experimental or medical observation and asks you to apply what you have learned to be able to explain, interpret, or predict something.
2. You are most likely to do well in the course if you approach the study of physiology more like you would physics rather than descriptive biology. To show that you understand physiology, you **MUST** be able to work problems. You will do much better on the exams if you study physiology as you would physics or math, **by doing the problems in writing on paper by yourself** or in a study group in which you *actively* participate. You cheat yourself if you just read the solutions and say "That makes sense." Watching a lot of tennis to improve your strokes is a poor substitute for playing a lot of matches. People who skip the problem sets or just read through them, regularly report that they have a hard time with the exams.

HOW TO GET THE MOST OUT OF THE PROBLEM SETS:

Step 1: Begin work on each problem set by treating it like a closed-book exam: that is, write the best, most complete, answer you can on paper.

Step 2. THEN **improve** your answers by consulting your lecture notes, Course Outline, textbook, Podcasts, etc.

Step 3. FINALLY (and not before steps 1 and 2) compare your answers with the solutions to the problem set, **concentrating on the DIFFERENCES between your answer and the answer on the key.** If you don't understand a problem set answer, ask for an explanation in a section, office hour, or e-mail.

3. Solutions to the questions will be (a) discussed in sections and (b) posted on WebCT after the final section of each week meets.

4. One last reason to take the problem sets seriously: **all information introduced to you on problem sets is regarded as part of the course material.** You may see questions on exams that are similar to ones in problems, so be sure you study the problems as part of the course.

Your textbook includes questions at the end of each chapter. Solving these problems will give you further practice.

PROBLEM SOLVING SESSIONS: These are run by Dr. Leutgeb and are intended to help you with problem solving, in addition to the problem sets and the discussion sections in this course. There will be several one-hour problem solving sessions during the quarter. The times and places for these sessions will be announced.

Attendance at these sessions is optional, and these sessions are not a substitute for sections. The sessions will demonstrate how to think through problems that are similar to the ones you will be asked to solve on exams. The problems won't be available in advance--after all, part of the process of solving a problem is figuring out what question is being asked--and they will be different from the ones on the problem sets. In one hour, there will usually not be enough time to answer questions that are not related to the problems being discussed, but such questions can be considered if there is time.

NOTE: The first session will be a brief review of several topics from introductory physics, chemistry, and pre-calculus math that we will use during the course. This material will be used during the quarter, so this session will help you review topics that you may not have thought about for awhile.

EXTRA HANDOUTS: Relatively few things are handed out in class for this course, but extra copies of all handouts will be available in a plastic bin in the main hall outside the elevator on the third floor of Pacific Hall.

EXAMS:

1. GRADING: Your grade for this course will be based on your performance in two mid-term exams and a final. Each mid-term exam will be worth approximately 100 points and will consist largely of short-answer questions and problems. The final will be worth 200-225 points and will include multiple-choice questions. Copies of the midterms from BIPN 100 in Spring Quarter 2008, taught by Dr. French, are included at the end of this book. **Your grade in this course will depend entirely on your performance on the three exams. Because we can only grade the words and diagrams on your exam, it is worth paying attention to how clearly and carefully you express yourself.**

2. EXAM SCHEDULE:

Midterms:	Tuesday, January 26	8:00 a.m. to 9:20 a.m
	Tuesday, February 23	8:00 a.m. to 9:20 a.m
Final:	Thursday, March 18	8:00 a.m to 10:59 a.m

Locations will be announced in class and on WebCT.

3. MAKE-UP EXAMS: You are expected to take the exams when they are scheduled. To be fair to your fellow students, make-up exams can be arranged only in the following three circumstances:

- You are too ill to take the exam. In order to be excused from an exam or to take a make-up exam (I decide which is most appropriate for you) you must telephone Dr. Leutgeb and let him know that you are ill as soon as it is possible to do so (before the exam, if it is at all possible), **and you MUST bring verification written by a physician that you were too ill to take the exam when it was scheduled.**
- You have an extremely pressing need to be out of town at the time when the exam is scheduled (not the day before or the day after), and you have arranged the make-up exam at least one week in advance. You cannot arrange a make-up exam after the fact. It will help in making these arrangements if you bring written confirmation of your need to miss the regularly scheduled exam when you ask to schedule a make-up exam. In any case, you will also need to bring the corroborating documents to the make-up exam.
- You are taking a course for academic credit toward graduation that conflicts with the exam, and you have arranged the make-up exam at least one week in advance. You must bring corroborating documents to the make-up exam.

Your last chance to schedule a make-up exam for the circumstances that are listed in B and C is by talking to Dr. Leutgeb after the class that is held one week before the day of the exam. If you fail to talk with me before or at that time, you must take the exam as scheduled (unless you are too sick to do it--see part A above).

PLEASE NOTE: Having another mid-term scheduled on or near the day of our mid-term is not a reason to take a make-up exam.

4. GETTING BACK GRADED EXAMS: Each exam will include a waiver that you can sign to have your exam put in a box in the elevator lobby on the 3rd floor of Pacific Hall, so it will be available to you any time when Pacific Hall is open. Grading usually takes about a week.

If you do not sign the waiver, you can get your exam in one of two ways:

1. During office hours after the exams have been made available to the rest of the class,
2. Provide Dr. Leutgeb with a self-addressed and stamped envelope. Your exam will be mailed to you.

5. GRADES: All the points that each student earned on all three exams will be totaled. Then the top five scores will be averaged, and that average will be considered "100%." An A will be 90% and above, a B 80%-89%, a C 60%-79%, and a D 50%-59. Plus or minus signs are usually not assigned to letter grades, but occasionally, plus or minus signs are added to the grades of students who are only one or two points above or below a cut-off.

6. REGRADES: If you have an objection to a **particular exam question**, you have 24 hours from the end of the exam to raise your concerns. Objections to exam question must be made in person with a prepared, written argument of why that question was unfair. A decision will then be made whether to not grade that question for the entire class.

If you have objections to the grading of a question on **your** exam, you have one-week from when you receive your graded exam to petition for a regrade. Your argument must be prepared in writing and submitted in person with your graded exam to the teaching assistant who graded the question. If you and the TA do not agree, you can have the TA sign your petition and can then forward your petition to Dr. Leutgeb. If you are not able to see the TA in person during the one-week period after the exam, you can send the petition by e-mail to the TA, but you will have to meet in person before it can be regraded by the instructor. Note that a regrade by the instructor may result in a gain or loss of points, and regrading may not be limited to the question you petitioned about. Graded exams will be randomly copied before being returned. If you are found altering your answer to an exam question and resubmitting that question for a regrade, you will be given a zero on the entire exam and reported for academic dishonesty.

7. ACADEMIC DISHONESTY: Cheating or any other form of academic dishonesty is not tolerated. Any student caught cheating on an exam will receive a zero for that exam and will be reported to the dean of his/her college for administrative action.

BOOKS ON RESERVE: Course reserves for this course are at the Bio Med library. The following books will be on reserve. Please use them if you find you are confused and need clarification about material in the course or if you want additional information about topics in the course that you find particularly interesting. If you read several sources, you are likely to find that the authors of various books and articles disagree with one another, with your text, and/or with what you hear in the lectures. Disagreement about some subjects is common in science, particularly in fields in which there is very active research; don't be surprised. For the purpose of the exams in this course, the material presented in lectures and in readings in the Silverthorn text will be considered correct.

Bear, Connors, and Paradiso *Neuroscience-Exploring the Brain*, 2nd edition. Lippincott, Williams and Wilkins, (2001).

Berne, Levy, Koeppen, and Stanton *Physiology* 5th edition. Mosby (2004).

Guyton and Hall *Textbook of Medical Physiology*, 11th edition. Saunders.

Lehninger *Principles of Biochemistry*, most recent edition.

Purves, Augustine, Fitzpatrick, Katz, LaMantia, McNamara, and Williams. *Neuroscience* (3rd edition). Sinauer (200).

Randall, Burggren, and French. *Eckert Animal Physiology*, 5th edition. Freeman (2002)

West, J. *Best and Taylor's Physiological Basis of Medical Practice*, 12th edition (1991).

Widnaier, Raff, and Strang *Vander, Sherman, and Luciano's Human Physiology. The Mechanisms of Body Function*, 11th edition, McGraw Hill (2006).

SECTIONS: Sections will not meet during the first week of the quarter; they will start in the week of January 11th. The times and locations of sections as listed in the Fall Quarter Schedule of Classes may not be correct. **A correct schedule will be posted on WebCT by the end of Friday, January 8th.** Attendance at sections is not mandatory, and you don't have to sign up for any particular section, but you may find them useful. Sections are an excellent time to go over any questions you have about material in the lectures or textbook and solution to problem sets. In addition, regular attendance at and active participation in a section can weigh in your favor if your final grade is just below a grade line.

INSTRUCTIONS FOR TAKING BIPN 100 EXAMS

The exams in this course are closed book, closed notes, and electronics-free. That is, you must use only what is in your brain to answer questions. Using anything else (e.g, electronic devices or someone else's exam) constitutes a breach of academic integrity and will be treated accordingly. We will enforce all of the following conditions. You can minimize the time it takes to get set up for an exam--and thus maximize the time you have available to complete the exam--by learning the rules and following them without being reminded. YOU have the power to make exams go efficiently and smoothly or not, which will eat into your time for the exam.

1. Students will sit every-other-seat. Your TAs will tell you the seating arrangement in your room.
2. All electronic devices must be turned off and stored in a bag/backpack that is placed under your desk. This rule applies to cell phones, MP3 players (iPods), calculators, netbooks, earphones--all electronic devices except digital watches. Setting your cell phone to "vibrate" isn't turning it off, and putting devices into your pockets isn't putting them under your desk. If we can see or hear an electronic device, we will confiscate it.
3. All of your belongings--except what you will write with--must be placed UNDER the seat that YOU are sitting in. Please don't put anything on the desk next to you, on the floor in front of you, or anywhere else except under your desk where you can't see them and we can't trip over them.
4. If you desperately need it, you can have one clear plastic bottle of water that is no larger than 1 pint. You cannot have large pencil boxes filled with lots of things or any snacks.
4. Hats can either be removed or turned with the bill to the back of your head. Once the exam begins, you can't touch your hat, wherever it is. Hooded sweatshirts or jackets must be worn with the hood down, not on your head or covering your face.
5. You can write either with a pen or with a pencil. Please use whatever allows you to write legible answers. If the person grading your answer can't read it, you will not be given credit, so keeping your exam neat and legible is definitely in your best interest.
6. Bring your UCSD ID card to every exam. You will be required to show it when you turn in your exam.
7. Be sure you turn your exam in as you leave the exam room. Don't take any exam materials with you when you leave. You may be asked to leave through a particular door.
8. Put your name and ID number on EVERY page. We take the exams apart, and if pages are unlabeled, we won't know whose they are.
9. Depending on circumstances, we may or may not be able to allow restroom breaks. Arrive early at the exam room to learn how this issue will be handled in your room.
10. As a rule, we won't grade anything that is written on the back of exam pages, so you can use the backs of pages as scratch paper. If you need to write something on the back of a page and you want us to grade it, you must get explicit permission from an instructor BEFORE you begin writing on the back of the page.

Lecture	Date	Topic	Assigned reading in Silverthorn, 5th edition
1	January 5	Introduction; homeostasis and allostasis	2-16, 196-209
		<i>Control systems that regulate body function</i>	
2	January 7	Neuronal signal transmission: neurons and resting potentials	133-147, 158-171
3	January 12	Neuronal signal transmission: action potentials	247-272
4	January 14	Communication between neurons: synaptic transmission	273-289
5	January 19	Organization of the nervous system: parts of the central and peripheral nervous systems	297-318
6	January 21	Sensory pathways Motor pathways	334-349 447-463
7	January 26	FIRST MIDTERM EXAM: 8 A.M. TO 9:20 A.M. NO LECTURE (Exam will cover material through the lecture on Thursday, January 21)	
8	January 28	The brainstem, the autonomic nervous system, and the limbic system	386-398, 318-322
9	February 2	Control by hormones: endocrine function and the hypothalamus-hypophyseal axis; the biochemistry and cell physiology of hormonal control	215-240
		<i>Muscular system</i>	
10	February 4	Striated skeletal muscle: molecular mechanisms for generating force Striated skeletal muscle: organ physiology	407-432
11	February 9	Smooth muscle	432-441
		<i>Cardiovascular system</i>	
12	February 11	Introduction to cardiovascular system; cardiac anatomy	468-471, 476-481
11	February 16	Cellular cardiac physiology, autoregulation	481-487
13	February 18	Signal conduction through the heart; the electrocardiogram	487-505

Lecture	Date	Topic	Assigned reading in Silverthorn, 5th edition
		Cardiac mechanics	
14	February 23	SECOND MIDTERM EXAM: 8 A.M. TO 9:20 A.M. NO LECTURE (Exam will cover material through the lecture on Thursday, February 18)	
15	February 25	The systemic and pulmonary circulatory loops	513-524
16	March 2	Hemodynamics, transfer of materials between blood and tissues Regulation of cardiac function	471-478, 526-532
17	March 4	Regulation of blood pressure	524-526, 532-540
		<i>Renal physiology and the regulation of body fluids</i>	
18	March 9	Body fluid compartments Structure and function of the kidneys	54-58, 148-157 623-662
19	March 11	Endocrine control of renal function	662-680
20	March 18	FINAL EXAM: 8 A.M – 10:59 A.M. (Exam will cover all material)	

The final exam in this course is scheduled at 8 a.m. on Thursday, March 18. See the General Information section of the Course Outline for more information about exams.